

## Low-power formaldehyde detector for space applications, Phase I

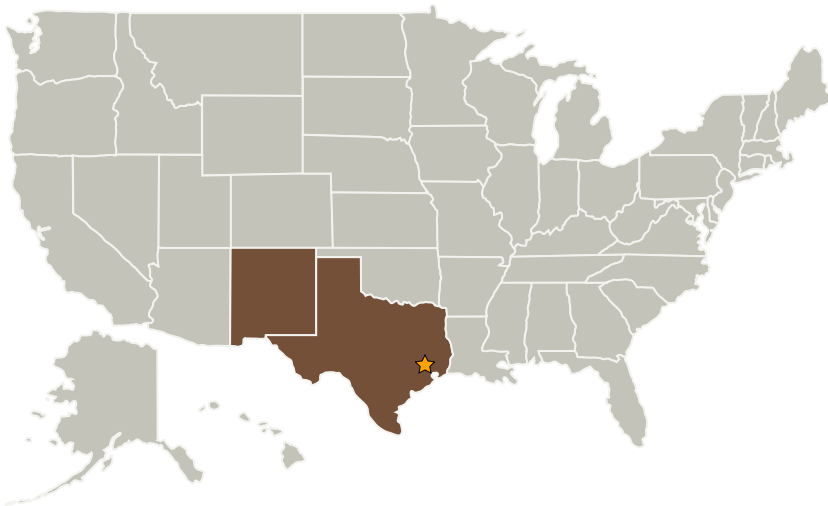
Completed Technology Project (2004 - 2004)



## Project Introduction

Trace contamination of the International Space Station (ISS) by formaldehyde—a known carcinogen—is a significant potential threat to crew health. The spacecraft maximum allowable concentration (SMAC) in air is only 40 parts per billion and ambient concentrations appear to be increasing as formaldehyde outgasses from a variety of plastic components. Monitoring formaldehyde levels is difficult because few analytical methods can achieve sufficient sensitivity from instrumentation that can be adapted for space-based operation. The current detection method—using absorbent “badges”—relies on post-flight analysis of the adsorbent material. Some of those measurements show formaldehyde concentrations close to the SMAC upper bound. As a result, a need exists for a reliable, fully automated analyzer that can provide continuous monitoring of formaldehyde concentrations on board the ISS. The target detection sensitivity is 10 ppb and the response time should be  $\leq 10$  minutes. Southwest Sciences proposes the development of an optical analyzer for formaldehyde that is expected to meet the requirements of space-based operation. The instrument will be compact, light weight, require little electrical power and no consumables, and will be able to operate for extended periods (months to years) without maintenance or re-calibration.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Johnson Space Center (JSC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Southwest Sciences, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico

## Primary U.S. Work Locations

New Mexico	Texas
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Daniel J Kane

## Technology Areas

**Primary:**

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.4 Environmental Monitoring, Safety, and Emergency Response
    - └ TX06.4.2 Fire: Detection, Suppression, and Recovery